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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/531,152

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Paul Howard

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EXAMINER

LUGO, DAVID B

ART UNIT

PAPER NUMBER

2611

MAIL DATE

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07/17/2009

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/531,152	<b>Applicant(s)</b> HOWARD, PAUL	
	<b>Examiner</b> DAVID B. LUGO	<b>Art Unit</b> 2611	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 06 April 2009.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-10 and 15-19 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-3, 5, 7-10, 15-17 and 19 is/are rejected.
- 7) ☒ Claim(s) 4, 6 and 18 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)          | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

## **DETAILED ACTION**

### ***Response to Arguments***

1. Applicant's arguments with respect to claims 1-3 and 15-17 have been considered but are moot in view of the new ground(s) of rejection.

### ***Claim Objections***

2. Claim 8 is objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form. Claim 8 recites the same limitations as that recited in claim 1 and is a substantial duplicate thereof.

### ***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1, 3, 5, 7-10, 15, 17 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fague et al. U.S. Patent No. 5,768,317 in view of McGibney U.S. Patent No. 7,324,559.
5. Regarding claims 1, 8 and 15, Fague discloses a transmitter in Figure 2 comprising means for receiving independent I and Q signals (52, 53), a DAC 20 for converting the digital signals to analog signals, an up-converter 26 to up-convert the analog signals to a single radio frequency signal, and an analog channel filter 30 configured to filter the up-converted analog signals, wherein the transmitter includes a digital pre-equalizer filter coupled before the DAC and is

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configured to filter the digital signals, wherein the digital pre-equalizer filter comprises a first digital filter 54 and a second digital filter 55 configured to apply complex coefficients to the received digital signals (col. 4, lines 39-55). Fague does not disclose that the DAC is configured to independently convert the digital signals to analog signals, or that the pre-equalizer filter provides asymmetric equalization of the received digital signals.

6. McGibney discloses a transmitter in Figure 2 comprising a D/A converter 62 that receives I and Q signals and independently converts the digital signals to analog. McGibney further discloses a pre-equalizer filter 62 in the transmit chain, and teaches a configuration of a pre-equalizer in the transmitter and a post-equalizer in the receiver, which is referred to as asymmetric equalization. McGibney further discloses that the pre-equalizer is included in a base station (col. 6, lines 33-37). It would have been obvious to one of ordinary skill in the art to apply the asymmetric equalization using pre-equalization in a base station, as taught by McGibney in the transmitter of Fague because it moves processing to the base station while simplifying the terminal (col. 6, lines 35-37).

7. Regarding claims 3 and 17, Fague further discloses that second digital filter 55 corrects for an amplitude response from the analog channel filter (see Fig. 6).

8. Regarding claims 5 and 19, node B base stations in TDD systems are well known in the art. It would have been obvious to one of ordinary skill in the art to implement the system of Fague in combination with McGibney in a node B base station as a matter of design consideration.

9. Regarding claim 7, Fague further discloses that the digital pre-equalizer filter is programmable (col. 3, lines 3-10).

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10. Regarding claim 9, one of ordinary skill in the art would recognize that in different situations, the largest of the filter coefficients may be real, as a matter of design consideration.

11. Regarding claim 10, Fague discloses that the bandpass filter may have a roll-off characteristic (col. 3, lines 61-65).

12. Claims 2 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fague et al. in view of McGibney, as applied above, and further in view of Allpress U.S. Patent Application Publication No. 2002/0131488.

13. Regarding claims 2 and 16, Fague in combination with McGibney disclose a transmitter as described above, where the filter response of first filter 54 is based on the inverse of the analog channel filter 30 (col. 4, lines 39-43), and where the phase response is shown to be non-linear (Fig. 7). Fague does not disclose that the digital filter is constructed to provide a time reverse version of the filter. Allpress discloses that coefficients of an equalizer are computed in a time-reversed manner to compensate for a maximum phase response (para. 0010). It would have been obvious to one of ordinary skill in the art to compute the coefficients in a time-reversed manner as taught by Allpress in the transmitter of Fague in combination with McGibney to account for various phase conditions (see abstract).

***Allowable Subject Matter***

14. Claims 4, 6 and 18 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

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***Conclusion***

15. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to DAVID B. LUGO whose telephone number is (571)272-3043. The examiner can normally be reached on M-F; 9:30-6.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Shuwang Liu can be reached on 571-272-3066. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/David B. Lugo/

Primary Examiner, Art Unit 2611

7/14/09